

### **REMARKS/ARGUMENTS**

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1. Rejection of Claims 1 and 12 under 35 U.S.C. § 1112, first paragraph.

Claims 1 and 12 were rejected as allegedly lacking enablement for polyimide. Although Applicants contest the merit of this rejection, Applicants have cancelled Claim 12 to expedite prosecution of this application. As to Claim 1, polyimide is not recited as an element, and thus the rejection was never proper to begin with. Accordingly, the rejection of Claims 1 and 12 should be removed.

2. Rejection of Claims 1, 5-14, 110-114, and 116-118 under 35 U.S.C. § 102(b).

Claims 1, 5-14, 110-114, and 116-118 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Hoffman et al. (U.S. No. 2004/0076681). Claims 1, 5-14, 110-117 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ghadiri (U.S. No. 6,613,875). Claims 1, 5-14, 110-117 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ghadiri (U.S. No. 6,613,875) and Wu et al. Claims 1, 5-9, 11-14, and 111-117 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Majumdar et al. (U.S. No. 2002/0175408). Such rejections are traversed in part and overcome in part as follows:

(a) Claim 1. Currently amended independent Claim 1 recites, among other elements, a fluidic nanotube comprising a non-carbon, hydrophilic, tubular member having first and second ends, and an inner bore between said first and second ends. In particular, the tubular member comprises a single crystalline structure. The growth of single-crystalline semiconductor nanotubes provides a number of advantages for nanoscale electronics, optoelectronics, and biochemical sensing applications. Such structure is not present in the reference cited by the Examiner.

Applicants were unable to find any teaching or suggestion of a single-crystalline

nanotube material in Hoffman et al., as the only disclosure regarding a nanotube or “coating” structure in Hoffman et al. is directed to the “porosity” of the coating walls. A word search for the term “single-crystalline” showed that the term was not found anywhere in the Hoffman et al. reference (similar terms, such as “mono-crystalline”, “single”, “crystalline”, or “crystal”, were also not found). Page 4 of the present Office Action states that Hoffman et al. discloses a tubular member “formed by a process comprising the steps of forming a single-crystalline core material (Hoffman et al. simply and straightforwardly refer to Applicant’s long thin “core material” as a “fiber”)”. However, no such discussion of the “fiber” composition, nor of the “surface coating”, was found in Hoffman et al. for a core material or nanotube material. Thus, Hoffman et al. fails to teach or discuss all the elements of Claim 1, in particular, a single-crystalline nanotube.

Ghadiri similarly fails to recite a nanotube comprising a single crystalline structure. Page 5 of the Present Office Action cites FIG. 18E and column 5, lines 1-5, of Ghadiri as showing a nanotube comprising a single crystal. However, Ghadiri only discloses a series of axially aligned molecular tubes (see FIG. 1). Thus, the nanotube disclosed in Ghadiri only shows a tube having a plurality of elements. The text cited by the Examiner states “FIG. 18E represents an electron diffraction pattern recorded from a single particle of cyclic peptide tubes showing orders of a 14.92 .ANG. meridional spacing and a 4.73 .ANG. axial spacing. Axially the pattern extends weakly to the third order (1.57 .ANG. data not shown) demonstrating that the particles are highly ordered and crystalline.” (emphasis added). This section of text only describes an image of “a single particle of “tubes”. This does not suggest or teach a single particle nanotube, and in particular a single crystalline nanotube. This is further evidenced by the plurality mentioned in the last sentence in the cited text “demonstrating that the particles are highly ordered and crystalline.”

Applicants were unable to find any teaching or suggestion in the Ghadiri reference for a single crystalline structure, and thus Ghadiri fails to show all the

elements of Claim 1.

The Wu et al. article also fails to describe all the elements of Claim 1. Claim 1 recites, among other elements, a nanotube having a non-porous inner wall. The Wu et al. article is absent any description or illustration of the shape of the inner wall, nonetheless the porosity. Hence, Wu et al. fails to teach or describe all the elements of Claim 1.

Majumdar et al. similarly does not show a single-crystalline nanotube. Majumdar et al. teaches a novel synthesis of co-axial nanowires. As pointed out by the Examiner, Majumdar et al. explains that the nanowire synthesis “approach can be used to synthesize a nanotube.” However, applicants were unable to find a description or teaching of synthesis of a single-crystalline nanotube. Thus, Claim 1 is novel over Majumdar et al.

(b) Claims 5-14 and 110-117. In addition to being patentable over the cited reference as indicated above, Claims 5-14 and 110-117 each recite additional elements that are not found in the cited reference.

For example, Claim 9 recites a nanotube formed from a core material that is single-crystalline. As explained above, a single crystalline core is neither taught nor suggested in the Hoffman et al. reference. Therefore, since the limitations of Claim 9 have not been taught nor suggested in the cited art, Claim 9 is therefore allowable.

Claim 10 recites a nanotube formed as an epitaxial casting over said core. Claim 13 similarly recites a nanotube material that has a sufficiently similar crystalline structure and lattice constant as the material selected for said core material to allow epitaxial growth of said nanotube material on said core material. Applicants were also unable to find any teaching or suggestion of the material orientation of the “coating” in Hoffman et al. as the only disclosure regarding nanotube or “coating” structure in Hoffman et al. is directed to the “porosity” of the coating walls. As explained above, a word search for the term “single-crystalline” showed that the term (and similar terms such as “mono-crystalline”, “single”, “crystalline”, or “crystal”) was not found anywhere

in the Hoffman et al reference. Hence, Claims 10 and 13 are allowable over the cited art.

With regard to the Examiner's argument with respect to product by process claims on page 6, 7, 8, 9, and 11, Applicants note that the final product itself is novel, as none of the cited references teach of a single-crystalline nanotube having a non-porous inner wall.

Therefore, the rejection of Claims 1, 5-14, and 110-17 under 35 U.S.C. § 102(b) is improper, and should be removed.

3. Amendments Made Without Prejudice or Estoppel.

Notwithstanding the amendments made and accompanying traversing remarks provided above, Applicants have made these amendments in order expedite allowance of the currently pending subject matter. However, Applicants do not acquiesce in the original ground for rejection with respect to the original form of these claims. These amendments have been made without any prejudice, waiver, or estoppel, and without forfeiture or dedication to the public, with respect to the original subject matter of the claims as originally filed or in their form immediately preceding these amendments. Applicants reserve the right to pursue the original scope of these claims in the future, such as through continuation practice, for example.

4. Conclusion.

Based on the foregoing, Applicants respectfully request that the various grounds for rejection in the Office Action be reconsidered and withdrawn with respect to the presently amended form of the claims, and that a Notice of Allowance be issued for the present Application to pass to issuance.

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In the event any further matters remain at issue with respect to the present application, Applicants respectfully request that the Examiner please contact the undersigned below at the telephone number indicated in order to discuss such matter prior to the next action on the merits of this application.

Date: September 7, 2007

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'J. P. O'Banion', written in a cursive style.

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